

**We Claim:**

- 1) A process for delivering a polynucleotide complexed with a compound into a parenchymal cell of a mammal, comprising:
  - a) making the polynucleotide-compound complex wherein the compound is selected from the group consisting of amphipathic compounds, polymers and non-viral vectors;
  - b) inserting the polynucleotide into a mammalian vessel;
  - c) increasing the permeability of the vessel; and,
  - d) delivering the polynucleotide to the parenchymal cell.
- 2) The process of claim 1 wherein increasing the permeability of the vessel consists of increasing pressure against vessel walls.
- 3) The process of claim 2 wherein increasing the pressure consists of increasing a volume of fluid within the vessel.
- 4) The process of claim 3 wherein increasing the volume consists of inserting the polynucleotide in a solution into the vessel.
- 5) The process of claim 4 wherein a specific volume of the solution is inserted within a specific time period.
- 6) The process of claim 5 wherein increased pressure is controlled by altering the specific volume of the solution in relation to the specific time period of insertion.
- 7) The process of claim 6 wherein the vessel consists of a tail vein.
- 8) The process of claim 1 wherein the parenchymal cell is selected from the group consisting of liver cells, spleen cells, heart cells, kidney cells, prostate cells, skin cells, testis cells, skeletal muscle cells, fat cells, bladder cells, brain cells, pancreas cells, thymus cells, and lung cells.
- 9) A process for transfecting genetic material into a mammalian cell, comprising:

- a) designing the genetic material for transfection;
- b) inserting the genetic material into a mammalian blood vessel;
- c) increasing permeability of the blood vessel;
- d) delivering the genetic material to the mammalian cell; and,
- e) altering endogenous properties of the cell.

10) The process of claim 9 wherein increasing the permeability of the vessel consists of increasing pressure against blood vessel walls.

11) The process of claim 10 wherein the blood vessel consists of a tail vein.

12) The process of claim 9 wherein the parenchymal cell is a cell selected from the group consisting of liver cells, spleen cells, heart cells, kidney cells, prostate cells, skin cells, testis cells, skeletal muscle cells, fat cells, bladder cells, brain cells, pancreas cells, thymus cells, and lung cells.